Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Access Charge Reform	)	CC Docket No. 96-262
	)	
Price Cap Performance Review for Local Exchange Carriers	)	CC Docket No. 94-1
	)	
Transport Rate Structure and Pricing	)	CC Docket No. 91-213
	)	
Usage of the Public Switched Network by Information Service and Internet Access Providers	)	CC Docket No. 96-263

COMMENTS OF MOTOROLA, INC.

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COMMENTS OF MOTOROLA, INC.

I. Introduction and Summary

Motorola, Inc. ("Motorola")[1] hereby submits its comments in response to the *Notice of Inquiry* ("NOI") issued by the Commission in the above-captioned proceeding on December 24, 1996.[2] Consistent with Congress's broad pronouncement that "[i]t is the policy of the United

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[1] Motorola is one of the world's leading providers of components and services for wireless communications, semiconductors, and advanced electronic systems. The company's major equipment businesses include paging and data communications, cellular telephone, two-way radio, personal communications services, automotive, defense, and space electronics, and other products. In addition, Motorola holds a substantial number of patents essential to V.34 modem technology, and is a long-time leader in the development of analog modem technologies and the market leader in the emerging ISDN and cable modem industries.

[2] *Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing, Usage of the Public Switched Network by Information Service and Internet Access Providers,* FCC 96-488 (Dec. 24, 1996) (Notice of Proposed Rule

(Continued...)

States to promote the continued development of the Internet and other interactive computer services and other interactive media . . . unfettered by Federal or State regulation,"[3] the NOI solicits commenters' views as to whether, after conclusion of that portion of the proceeding proposing reforms for the interstate access charge system, the FCC should implement any additional actions in order to ensure that the agency's policies "best facilitate the development of the high-bandwidth data networks of the future"[4] and "provide incentives for investment and innovation in the underlying networks that support the Internet and other information services."[5]

Motorola commends the Commission's commitment to the formulation of rules and policies that will maximize the continued successful growth and development of information services such as the Internet. In Motorola's experience, the FCC will best accomplish this goal through the removal of regulatory and economic barriers that interfere with the introduction of new technologies capable of offering cost effective, efficient alternatives to traditional products, services, and configurations, and of meeting consumer demands for high-speed access to a wide variety of information services.

For example, Motorola currently offers or is in the process of developing a wide variety of high tech products designed to meet the needs of the "Information Age." These products include telephone network-based modems, cable-based modems, retail and networking integrated

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Making, Third Report and Order, and Notice of Inquiry) [hereinafter *Notice, Third Report and Order, and NOI*].

3 47 U.S.C. §§ 230(b)(1), (2).

4 *Notice, Third Report and Order, and NOI,* ¶¶ 311, 312.

5 *Id.,* ¶¶ 283, 311.

services digital network ("ISDN") products, and several wireless data solutions, all of which offer enhanced speeds of access to on line services, the creation of alternative access routes that bypass local bottlenecks, increased availability of advanced information services, and greater intelligence and variety in the functions and capabilities of computing, information, and communications offerings.

Motorola is submitting these comments to build a record with respect to the existing and future contributions of new technologies in promoting Congress's and the Commission's goals concerning the continued development of information products and services. In addition, to ensure that the introduction of new technologies is not inhibited by regulatory and economic impediments, Motorola urges the Commission to fashion its rules and policies in a manner that will guarantee that: (1) existing regulatory barriers to the use of new technologies are removed; (2) service pricing is based on costs; and (3) any subsidies or other incentives to promote advanced infrastructure deployment are applied in a competitively and technologically neutral manner.

II. Background

In the *Notice of Proposed Rule Making* portion of the instant proceeding, the Commission tentatively concluded that information service providers should not be required to pay interstate access charges, as currently constituted.[6] The Commission reasoned that, because the existing access charge scheme contains non-cost-based rates and inefficient rate structures, there is no

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[6] *Id.*, ¶ 288.

reason for extending it to an additional class of users, particularly in view of the potentially detrimental impact on the growth of the still-evolving information services industry.[7]

In the NOI, the Commission further noted that its existing rules were designed for traditional circuit-switched voice networks and may hinder the development of emerging packet-switched data networks.[8] Accordingly, the agency solicited commenters' views as to how the FCC's policies could be formulated to avoid such a result and, instead, to promote the development of high-bandwidth data networks while at the same time preserving incentives for investment and innovation in the underlying voice network. In this connection, the Commission requested commenters to address the following issues, among others: (1) how the FCC's rules can be devised to create incentives for the deployment of services and facilities that will allow more efficient transport of data traffic to and from end users; (2) what regulatory barriers – at either the state or federal level – might prevent provision of alternate network access arrangements for information service providers or create artificial disincentives against use of such arrangements when they become available; (3) how the issues presented in the *Local Competition* and *Universal Service* proceedings affect information service providers; and (4) the effects of the current system on network usage, incumbent LEC cost-recovery, and the development of the information services marketplace.[9]

As discussed in detail below, Motorola offers a number of products designed to enhance the efficient transport of information services to and from end users in a variety of ways.

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7 *Id.*

8 *Id.*, ¶ 311.

9 *Id.*, ¶¶ 313-316.

Motorola submits that the Commission can best accomplish its goal of promoting the continued development of high bandwidth data networks by removing regulatory and economic barriers to the introduction of precisely these types of new advanced technologies.

III. Motorola Offers A Variety Of High Tech Products – And Has A Number In The Planning Stages – That Are Designed To Meet The Needs Of The "Information Age"

As mentioned above, Motorola offers a wide variety of high tech products, and has several in the planning stages, that are designed to meet the needs of the "Information Age." These products include modem technology, encompassing both telephone network-based modems and cable-based modems, retail and networking ISDN products, and various wireless data solutions. They offer numerous public interest benefits such as enhanced speeds of access to on-line services, broadened availability of advanced information services in accordance with Congress's universal service goals, and greater intelligence and variety in the functions and capabilities of information services offerings.

Telephone network-based modems currently offered or under development by Motorola include the company's SM34DFV V.34 software modem and Lifestyle and Power Series desktop modems, to name a few. These products allow enhanced transmission speeds, increased transmission quality, affordability, and particularly in the case of the SM34DFV V.34 software modem, are easily upgradeable. Motorola also offers modems that are targeted to the needs of specific groups, such as portable computer users, corporate customers, and end-users working at home.[10] In addition, in mid-February, Motorola's Information Systems Group ("ISG"), which

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[10] In particular, Motorola's Lifestyle and Power Series PCMIA modems provide flexible and high speed connectivity for portable computers and allow lap top and notebook computer

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has been working on the development of 56 kbps modem technology, announced plans to work with Rockwell Semiconductor Systems to construct techniques for overcoming the limitations of analog connections and to permit Internet access rates of up to 56 kbps. Earlier this month, Motorola announced the introduction of a new generation of 56 kbps modems developed in conjunction with Rockwell. These modems will permit maximum interoperability, giving users a technology supported by more than 100 modem manufacturers and over 300 Internet Service Providers ("ISPs") worldwide, and will allow users to send files at speeds of up to 33.6 kpbs and to download files from the Internet at speeds of up to 56 kbps – nearly double the speed currently permitted.

In addition, Motorola is the developer of the CyberSURFR™ cable modem. CyberSURFR™ connects subscriber personal computers to the hybrid fiber coax system through a local area network connection specifically designed for on line services, Internet access, telecommuting, and other emerging services aimed at meeting the needs of home and business PC users. The CyberSURFR™ modem, which allows throughput speeds of up to 10 mbps in the downstream path and upstream data speeds of up to 768 kpbs, permits cable customers to access on-line services at speeds many times faster than conventional modems. To date, Motorola has shipped CyberSURFR™ cable modems and related network infrastructure equipment to

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users to access networks, on-line services, and distant local area networks ("LANs"), in addition to permitting such users to send and receive faxes. To meet the needs of corporate customers and end-users working from home, Motorola has developed a new 33.6 kbps modem technology designed for persons working at remote offices or central sites where rack-mounted modems are unnecessary, but where users must log on to a network or mainframe from outside the office, requiring a high level of throughput and quick access across a standard telephone or leased line. Applications include electronic mail, information retrieval via mainframe computers, remote access, electronic data interchange, and Internet access.

customers in more than 40 cities nationwide, including shipments to major cable companies such as Cox Communications, TCI, Comcast, and Time Warner. Motorola has steadily worked with various industry bodies, such as Cable Labs, MCSS, IEEE, DAVIC, and others, to ensure that its cable modems meet emerging industry guidelines and to accelerate the move toward interoperability and the adoption of standards. In support of these efforts, Motorola has shipped and installed a complete cable modem system to Cable Labs for performance and interoperability testing, has established a licensing program for its CableComm products to accelerate market development, and is working with various equipment vendors to license its cable modem technology. Similarly, in the related area of network equipment development and systems integration, Motorola has been working to deliver Voice-Over-Internet Protocol technologies for mainstream commercial use and recently entered into a memorandum of understanding with VocalTec Ltd., for a licensing and distribution agreement.

Motorola also offers an array of retail and networking integrated services digital network ("ISDN") products. As the Commission is aware, ISDN services permit digital transmissions over ordinary local loops through the use of advanced hardware and software.[11] ISDN allows data transmission at higher speeds and with greater reliability than standard analog service. In addition, ISDN services are as easy to use as analog offerings, but enable many enhancements. For example, the two 64 kpbs B channels can be used as individual voice and data lines at the same time – a user can use one channel to talk while using the other to send data files.[12] In

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[11] *Notice, Third Report and Order, and NOI,* ¶ 68.

[12] Whereas a standard analog phone lines provides one channel for voice, an ISDN line gives multiple channels for voice and data (referred to as "B channels") plus a control channel (the "D channel"). The most common ISDN line is called a Basic Rate Interface ("BRI"), with a

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addition, with ISDN's BONDING capability, users may combine both lines into a single high-speed 128 kbps link for dependable transmission four times faster than a 28.8 kbps analog modem. Other ISDN benefits include: (1) the ability to combine voice, data, and video over a single ISDN line; (2) ISDN connections are made almost instantly – typically, in less than a second – unlike analog modems and lines, which can require 30 to 60 seconds before data can be transmitted; and (3) because ISDN is digital, it offers near perfect line quality far superior to analog and, as a result, line conditions never force users to fall back to a slower speed.

Finally, Motorola has developed a number of wireless data solutions including local and wide-area data networks, mobile and portable data terminals, software, modems, and network services based on radio packet data technology, among others. These applications assist the business and home communities by allowing mobile workers to address business issues more quickly, work more efficiently, and recapture down time while traveling between appointments. In addition, wireless data offerings free mobile workers from the restrictions of telephones, PCs, and fax machines by enabling two-way messaging, Internet or corporate e-mail exchanges, faxing, file transfer and retrieval, and access to LAN-based services from almost anywhere, anytime.

In addition to promoting widespread access to advanced information services and increasing the efficiency and effectiveness of existing information service offerings, new

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"2B+D" configuration. This configuration allows users simultaneously to use one of the B channels for computer operations and the other for regular voice calls. The terminal adapter ("TA"), which is the device that connects the computer to the phone line (*i.e.*, a modem), uses the D channel to "talk to" the telephone company. The TA and the phone company are always talking on the D channel, regardless of whether the user is using one, both, or none of the B channels.

technologies such as those listed on the foregoing pages have produced a significant and prosperous market of their own. In 1996 alone, the market for the development of telephone and cable-based modems, ISDN products, and wireless technologies used in conjunction with information services was substantial. As discussed in detail below, the continued growth and development of the market for these offerings is largely dependent on the regulatory environment.

IV. The FCC Should Establish A Regulatory Environment Conducive To The Deployment And Use Of More Efficient And Capable Advanced Technologies

A. Regulatory Impediments To Innovative New Technologies Designed To Increase The Accessibility And Effectiveness Of Information Services Must Be Removed

To ensure that innovative new technologies capable of increasing the accessibility and effectiveness of information services are not stifled by regulatory impediments, it is essential that the FCC eliminate restrictions in its rules and policies that may act to inhibit such offerings.[13] For example, in the *Notice of Proposed Rule Making* portion of the *Access Charge Reform* proceeding, the Commission asked commenters to discuss whether more than one subscriber line charge ("SLC") should be applied to ISDN services.[14] Commenters were instructed to address in particular the effect of the 1996 Act on the determination of how many SLCs should

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[13] Indeed, the Commission issued the *NOI* in part to assist the agency in identifying "what regulatory barriers – at either the state or federal level – might prevent provision of alternate network access arrangements for information service providers, or might create artificial disincentives against use of such arrangements when they become available." *Notice, Third Report and Order, and NOI*, ¶ 314.

[14] *Id.*, ¶¶ 68-70.

be applied to ISDN lines.[15] As Motorola has previously demonstrated to the Commission – and as broad range of commenters responding to the *Access Charge Reform Notice of Proposed Rule Making* agree – a requirement that end users of ISDN services pay multiple subscriber line charges *would not be cost based* and would increase the cost of ISDN services so substantially that it would severely depress the demand for ISDN lines, services, and products, adversely impacting the nation's telecommunications and information policy goals.[16] To avoid such as result, Motorola agrees with the broad range of commenters who urge the Commission to make plain that SLCs will be assessed against ISDN lines on a *per facilities basis* and will not be assessed separately against each virtual channel resulting from the use of ISDN BRI or PRI services.[17]

The Commission can also encourage the introduction of advanced technologies by giving wireless operators the flexibility to offer all types of services, including fixed offerings. The agency took a significant step in this direction when it recently amended its rules to afford

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15 *Id.*, ¶ 70.

16 *See* Letter from Randy Roberson, Vice President and General Manager, Digital Transmission Products, Motorola, Inc., to The Honorable Reed E. Hundt, Chairman, Federal Communications Commission (dated April 11, 1995) (noting that reduced demand for ISDN services as a result of assessing multiple subscriber line charges against ISDN lines would cost Motorola a minimum of $100 million in lost equipment revenues). *See also, e.g.,* Comments of America's Carriers Telecommunication Association ("ACTA"), at 7; Comments of Ameritech, at 12; Comments of Bell Atlantic/NYNEX, at 34-35; Comments of BellSouth Corp. and BellSouth Telecommunications, Inc. ("BellSouth"), at 70; Comments of the Competitive Telecommunications Ass'n ("Comptel"), at 29-30; Comments of CompuServe and Prodigy Corp. ("CompuServ"), at 17-25; Comments of GTE Service Corp. ("GTE"), at 33-35; Comments of Microsoft Corp. ("Microsoft"), at 6; Comments of Sprint Corp., at 18.

17 *See, e.g.,* Comments of API, at 30-31; Comments of ACTA, at 7; Comments of Ameritech, at 13; Comments of BellSouth, at 70; Comments of Comments of Comptel, at 29-30; Comments of GTE, at 33-35; Comments of Pacific Telesis Group, at 64-66.

commercial mobile radio service ("CMRS") licensees "maximum flexibility to provide fixed or mobile services or combinations of the two over spectrum allocated for CMRS services."[18] In its order adopting these rule changes, the Commission cited with approval commenters' suggestions that fixed wireless offerings are capable of supplementing or replacing wireline services in the following ways, among others: (1) fixed wireless offerings can be imbedded into PBXs and local area networks to permit continued service even when wireline service is interrupted due to weather and other emergencies; (2) fixed wireless offerings help facilitate more efficient call routing; (3) fixed wireless links can be used to provide local loop service to schools, apartment buildings, office buildings, and older homes, where rewiring costs are typically very high; and (4) fixed wireless access services coming into homes and residences can offer an alternative to end-to-end wiring by the carrier from the switch to the end user.[19] In all of these respects, wireless offerings can also help improve the availability of information services as well as the efficiency with which such services are delivered.

Similarly, wireless local area networks ("wireless LANs") offer an effective alternative to traditional wired services by permitting computing devices to communicate through the use of radio signals rather than hard wiring. As a result of this capability, the Commission recently observed that wireless LANs are an efficient way to "overcome the high cost, delay, and difficulty often encountered in installing, expanding, or changing hard-wired LANs" and to

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[18] *Amendment of the Commission's Rules To Permit Flexible Service Offerings in the Commercial Mobile Radio Services,* 11 FCC Rcd 8965, 8973-74 (1995) (First Report and Order and Further Notice of Proposed Rule Making) [hereinafter *CMRS Flexibility First Report and Order and Further Notice of Proposed Rule Making*].

[19] *Id.* at 8973-74.

"overcome older design and construction techniques that did not contemplate the complex communication wiring otherwise needed to support the electronic office."[20]

In view of the significant contribution of wireless offerings in helping to promote the widespread availability of information services and in offering cost-effective and efficient alternatives to traditional wired configurations, Motorola urges the Commission to permit wireless operators maximum flexibility to provide these services over existing spectrum allocations. In addition, as the record developed in response to the Commission's *CMRS Flexibility* rule making proceeding demonstrates, consistent regulatory treatment of all services offered by CMRS carriers, whether fixed, mobile, or some combination thereof, is essential if the Commission truly intends to realize the substantial benefits – including the introduction of new technologies used in the provision of information services – that stand to be gained from permitting CMRS providers maximum operational flexibility.[21] Accordingly, as suggested by the vast majority of the commenters in that proceeding, the Commission should exercise its

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[20] *Federal Access To Low Power 18 GHz Private Operational Fixed Microwave Systems,* 8 FCC Rcd 3210 (1993).

[21] *See CMRS Flexibility First Report and Order and Further Notice of Proposed Rule Making,* 11 FCC Rcd at 8982-89. In the *Further Notice* portion of the *CMRS Flexibility* proceeding, the Commission solicited comment on the regulatory treatment of fixed services provided by CMRS operators and proposed to address the issue on a case-by-case basis. Under the Commission's proposed procedure, it would establish a rebuttable presumption that any wireless service provided under a CMRS operator's license is CMRS. Most commenters agreed that the Commission's proposed rebuttable presumption process would not afford CMRS licensees the regulatory certainty necessary to facilitate the offering of fixed wireless services or integrated fixed and mobile wireless applications, and urged the Commission instead to declare that all fixed applications provided by CMRS licensees are CMRS offerings and are subject to the same federal regulatory scheme as other CMRS operations. *See, e.g,* Comments of Motorola, Inc., WT Docket No. 96-6 (filed Nov. 25, 1996); Reply Comments of the Personal Communications Industry Association, WT Docket No. 96-6 (filed Dec. 24, 1996).

broad jurisdictional authority over CMRS operations and declare all services offered by CMRS operators CMRS offerings.

B. Service Pricing Should Be Based On Costs In Order To Send Proper Economic Signals To Manufacturers And Service Providers

Consistent with sound economic principles, the *Access Charge Reform* proceeding should ensure that service prices are based on the actual costs of connecting to the network. The vast majority of the commenters in the *Access Charge Reform* proceeding agree that access charges, as currently constituted, do not reflect economic costs and, as a result, inhibit the development of robust competition. Similarly, the Commission itself has recognized that the current access charge rules "impose charges for access services in a manner that does not accurately reflect the way . . . LECs incur the costs of providing those services," and that the "rate structure rules do not send accurate pricing signals to customers, and consequently, encourage inefficient use of telecommunications services" in a way that "could very well skew or limit the development of competition in the markets for telecommunications services."[22]

It is well recognized – and generally agreed – that access charge reforms that price charges closer to costs will send the appropriate economic signals to manufactures and service providers, thereby encouraging the development of new technologies and services, and will promote the efficient allocation of resources and avoid distortions in the market for new technologies used in the provision of telecommunications and information service offerings. If regulatory mandates set charges too high, the introduction of new technologies to be used by traditional service providers is deterred because innovative services that might have been offered

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[22] *Notice, Third Report and Order, and NOI,* ¶¶ 14, 49, 55-56.

by traditional operators become overpriced and the demand for such services decreases dramatically. A case in point would be the imposition of a full SLC charge for each derived channel for ISDN services. Conversely, if prices are below costs, entry by competitors making use of innovative technologies is deterred because they cannot expect to compete effectively and, therefore, will not be able to recover their costs.

C. Any Subsidies Or Other Incentives To Promote Advanced Infrastructure Deployment Should Be Applied In A Competitively And Technologically Neutral Manner

Consistent with the above philosophy, any subsidies or other incentives to promote advanced infrastructure deployment must be applied in a competitively and technologically neutral manner. As noted by numerous parties commenting on the Federal-State Joint Board's *Recommended Decision* on Universal Service, the use of technologically neutral criteria in applying subsidies and other incentives is imperative if the Commission hopes to establish a send the appropriate economic signals and create a regulatory environment that will encourage the introduction of new technologies. In particular, use of technologically neutral criteria "reflect[s] an acknowledgment that the telecommunications marketplace is rapidly changing, along with a recognition of the rapid development of technology."[23] Furthermore, technologically neutral and competitively neutral subsidy and incentive mechanisms serve the public interest and Congress's goals -- both under Sections 230(b) and 706 and Congress's Universal Service objectives -- by ensuring that regulatory obstacles do not prevent consumers from having affordable access to advanced telecommunications and information services. As outlined in Section III of this

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[23] Comments of the Personal Communications Industry Association ("PCIA") CC Docket No. 96-45, at 23 (filed Dec. 19, 1996).

pleading and in Motorola's Reply Comments in the Universal Service proceeding, wireless offerings often constitute the most efficient means for providing consumers in rural, remote, or high cost areas access to advanced services. To avoid favoring incumbent technologies over new wireless offerings or disproportionately burdening particular carriers or industry segments in the structuring of contribution mechanisms, technology and competitively neutral subsidies and incentives are imperative.

V. Conclusion

As the foregoing discussion demonstrates, there are a wide variety of innovative new technologies that have recently been introduced or are still in the development stages capable of making the nation's information services, such as the Internet, more efficient, more effective, and more widely available at more affordable rates. To facilitate the continued development of these types of offerings, it is imperative that the FCC ensure that the regulatory environment is conducive to the deployment and use of new technologies.

Respectfully submitted,

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Dated: March 24, 1997

CERTIFICATE OF SERVICE

I, Robin Walker, hereby certify that on this 24th day of March, 1997, I caused true copies of the foregoing to be delivered via hand delivery to the following persons:

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